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of Hip Deformity in Adults,**

WITH A REPORT OF CASES.

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GANT'S *FEMORAL OSTEOTOMY FOR THE CORRECTION OF HIP DEFORMITY IN ADULTS.

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In speaking of femoral osteotomy for correction of hip deformity, only a very brief account of the technique of the operation and the reasons for preferring this particular operation to the various other bone operations for correction of said deformity will be given—the chief object of this paper being to give in detail a clinical report of the adult cases that it has been my good fortune to operate on; and it is hoped when the report is finished you will think it was their good fortune to have fallen into my hands.

When one who has practiced the operation, reviews the clinical literature on this subject, it is rather surprising that it is not more extensive when the excellent results that can be obtained by it are considered.

In reviewing the volumes of the Transactions of the American Orthopedic Association, the writer has ascertained that only two sets of cases have been reported to that Association

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since its inception to its meeting in 1894, and among those cases only four were adults, properly speaking.

In 1888, Dr. Vance, of Louisville, Ky, reported a series of cases of femoral osteotomies, among which there were two cases 32 years old each.

In 1894, Dr. Gibney, of New York, reported a series of 100 cases of hip deformity treated in various ways, and in this series there were two adult cases, one 30 years old and the other 27 years old. It was the good fortune of the writer during his term as interne in Hospital for Ruptured and Crippled, New York, to assist Dr. Gibney in operating on his case, reported as being 27 years old; in this case a most excellent result was obtained.

Being impressed with the excellent results I have obtained in my adult cases, both on account of their almost extreme deformity and their advanced age, I have determined to make a clinical report of them in my introductory paper to the American Orthopedic Association.

There are several methods of doing femoral osteotomy for hip deformity spoken of in the text-books on orthopedic surgery, but only two are described in detail: one known as Adams' operation, which was first introduced by him in 1889; the other known as Gant's infra-trochanteric osteotomy, which was first introduced by him in 1872.

Gant's operation at present day has taken precedence of all others for correction of hip deformity due to bony ankylosis of that joint. The reason for this preference is very evident as it has a much wider field of application; in fact, it is just as applicable in cases in which Adams' operation cannot be done as in any

other. Adams' operation consists in dividing the neck of the femur with a saw through an open wound. This operation is inapplicable in cases where the femoral neck is absent or has been partly absorbed as a result of an extensive osteitis. When the osteitis has not been extensive enough to destroy the neck, the proximity of the operation to the old seat of disease would be very apt to relight the disease by disturbing a mass of encysted cheesy tubercular material that had been lying dormant for years.

Another objection to this operation is, that it being above the insertion of the psoas and iliacus muscles, it would be extremely doubtful whether a high degree of flexion deformity could be corrected by it without overcoming the resistance offered by these muscles by means of a myotomy, and to do this a very extensive operation would be needed.

The operation of Mr. Gant consists of a subcutaneous osteotomy done just below the trochanter minor, and is applicable in any case, as it is at a safe distance from the seat of the old disease, and is beyond the resistance offered by the psoas and iliacus muscles. It is applicable whether the limb is flexed, abducted or adducted.

The operation done in the cases here reported was performed in the following manner:

The most scrupulous precautions having been used to render the field of operation aseptic, a sand bag is placed between the thighs and pressed tightly against the perineum by an assistant, who at the same time holds the patient on her side; an osteotome is introduced in the long axis of the femur about a finger's breadth below the trochanter minor,

and by manual force forced down to the bone, using no scalpel, osteotome being sharp enough to cut its own way through the soft parts. As soon as the bone is reached, one gentle tap of the mallet will force the osteotome through the periosteum; the instrument is then turned in the transverse axis of the bone under the periosteum, a succession of blows by the mallet will force the osteotome through the bone; the instrument then being partly withdrawn through the bone, is tilted up and forced in the same way through lower fragment; after same has been done for the upper fragment the fracture should be easily completed by manual force. Great care should be exercised, however, not to use a great amount of force to complete the fracture for fear of breaking up adhesions in the joint or splintering the shaft at seat of operation.

The instrument used in these cases was a Vance osteotome made especially for me; the blade was three-quarters of an inch wide. The width advised in the text-books is one-half inch, but I have found that one three-quarters of an inch is much better in adult cases, for here the bones are large and hard.

The only local dressing used was a piece of sterilized gauze and a strip of adhesive plaster to hold it in place. This being applied, a plaster-of-Paris spica was put on, extending from the nipples to the toes after the limb was brought into the best possible position obtainable. While applying the plaster-of-Paris three assistants are needed, two to keep up traction from shoulders to feet, the third one being needed to support the hips and keep the limb in the corrected position.

Some surgeons prefer a bed frame and con-

tinuous traction to steady the leg to the use of the plaster-of-Paris spica, contending that it is neater and cleaner, and in that way the wound can be inspected from time to time. My experience has been that the spica when neatly and comfortably applied is more comfortable to the patient, as it produces absolute immobilization of the whole limb, which will prevent any pain incidental to the patient unconsciously turning in bed; furthermore, there is absolutely no danger of the limb getting out of position in which it is placed at the time of operation.

Another strong argument to the writer's mind in favor of the plaster spica is that my patients have been lifted from bed with perfect ease and comfort and placed on a reclining chair and taken out in the open air; and this way they have avoided the monotony of a long and tedious confinement to bed. This was done daily with the first case here reported after about the tenth day, and never for once did she complain of pain about the seat of the operation.

My experience with the subcutaneous osteotomy is that no inspection of the wound is necessary until the plaster-of-Paris is removed for good. If an open operation were done it might be necessary to inspect the wound from time to time; a fenestrum through the plaster, however, would admit that without difficulty.

CASE I.—Miss A., aged 30, referred to me by Dr. Ida J. Hieberger, of Washington, D. C., April 1st, 1895. The chief trouble complained of when I saw her was a severe and almost constant "back ache"; this back ache was very much worse at the time of menstruation. She had been treated by various physicians for her

painful back with a negative result, beyond that of temporary relief.

At the time of my examination, the following history was obtained: At 12 years of age she had hip disease of the left hip joint; no history of an abscess. Patient never had any treatment except by the family physician; she went on crutches for several years; never used any other protection to the joint. The writer's diagnosis was that it was a case of tubercular osteitis of the hip joint, resulting in one of nature's cures with an ankylosed joint in an exaggerated deformity.

Patient's general health was good, though a neurasthenic. Upon examination the left hip was found to be flexed to 100° , with about 10° of adduction; under ether the joint was found to be firmly ankylosed by bony union.

Comparative measurements revealed little atrophy and but half an inch actual shortening. The gait of the patient was pitiful in the extreme.

As a result of the distorted position of the pelvis in the patient's efforts at locomotion, the uterus was retro-flexed, which caused her to be a great sufferer from dysmenorrhœa; to this cause, together with the great strain on the spinal muscles in walking, I attributed the back ache that I was asked to treat.

The patient had been treated for the dysmenorrhœa with but little relief by an eminent gynæcologist, Dr. H. D. Fry, Washington, D. C., who informed me that he had attempted to support her uterus in its proper position by means of a pessary, but had been unable to devise an instrument that would remain in position on account of the distorted position of the pelvis in locomotion.

Feeling convinced that the patient could be benefitted in many ways by straightening the hip, it was unhesitatingly urged that a femoral osteotomy be performed.

On April 5th, 1895, under ether, I performed Gant's femoral osteotomy, and divided subcutaneously all resisting tendons and bands of fascia from the tuberosity of the ischium to the anterior superior spinous process of the ileum around the internal aspect of the thigh; this allowed the limb to be brought into a good position,; a plaster-of-Paris spica was then applied, extending from the nipples to the tips of her toes.

With the exception of ether nausea for several days, which, with the excitement of the operation, caused an attack of hysteria, the patient made an uninterrupted recovery. Her temperature went to 100° within the first twelve hours, after which it never went over 99° .

After the tenth day, the patient was put on a reclining wheel-chair and allowed to be taken out into open air daily. At the end of the fifth week, plaster-of-Paris was removed, when bony union was found to be firm. During the sixth week, patient was kept in the recumbent position without protection to the limb. She was allowed up on crutches during the seventh week, and during the ninth week they were discarded altogether.

Three months after the operation, measurements showed the limb to be at angle of 170° , and adduction deformity entirely overcome, and the limb one-half inch short.

Six months after operation, the patient was again examined, and the new position of the limb found to be unchanged. At this time

patient reports that she no longer suffers from dysmenorrhœa, and that the bachache has been very much improved.

Four months after the operation, Dr. Fry examined her uterus, and wrote me that he found its position much improved.

The result in this case should be of interest to the gynæcologist as well as the orthopædist, as the correction of the hip deformity relieved the position of the uterus, which in turn cured the dysmenorrhœa.

CASE II.—Miss B., aged 40, applied to me November 10th, 1895, to ascertain if anything could be done for the relief of the almost extreme hip deformity she had. She had been deformed for eleven years; the chief reason for her seeking advice at this time was because she contemplated matrimony, but was doubtful whether she should take such a step on account of the distorted position of her hip.

Upon examination, I found the following condition of affairs:

	A.	U..	A. S. P.	T.	C.
R.	32 $\frac{1}{2}$	32	10	17	14
L.	32 $\frac{1}{2}$	37	...	21	14 $\frac{1}{2}$

From the measurements, it will be seen that she had five inches of apparent shortening, which gave her about 30° of adduction.

This amount of adduction, with the necessary distortion of the lumbar spine, to render the legs parallel, to enable her to walk, made her about the most pitiable looking object when walking I have ever seen. Her deformity was a source of great mortification to her.

With this condition, I advised her not to think of matrimony, and urged an operation to straighten the limb, explaining to her the

reasons for her not marrying with her limb in such a position.

The history of her case was clearly one of bony, or firm fibrous ankylosis, due to rheumatism, from which she was a great sufferer for several years. The rheumatism, after affecting numerous joints, located itself in the right hip-joint. In about two years, all acute symptoms of rheumatism subsided, and for the past eight years she has been in excellent health, with no return of the rheumatism.

On January 18th, 1896, she was etherized, preparations having been made to do an osteotomy if the rheumatic adhesions could not be broken up with a reasonable amount of force. Force was applied with absolutely no result—the joint would not budge one iota.

Gant's femoral osteotomy was done in usual way, and limb put up in a plaster-of-Paris spica. Her temperature never went over 99° ; she made an uninterrupted recovery.

February 24th, plaster was removed; firm bony union was found to exist; patient was kept in recumbent position without support another week, making about six and a half weeks, all told; she was then allowed up on crutches, which were used for about four weeks.

Three months after the operation, the following measurements were taken:

	A.	U.	A. S. P.	T.	C.
R.	32	$36\frac{1}{2}$	10	17	14
L.	$32\frac{1}{2}$	37	..	21	$14\frac{1}{2}$

Thus showing the adduction entirely overcome, and one-half inch of real shortening; this, of course, is accounted for, in a large measure, by the bend in the femur necessary

to straighten the limb after the bone was broken.

The great joy given these ladies by relieving their deformities would have well paid me for my labor had I not received a more material compensation.

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